

WHAT IS CLAIMED IS

5 1. A semiconductor base comprising a substrate and a semiconductor crystal formed on said substrate by vapor phase growth, wherein the substrate has a concavo-convex surface as a crystal growth plane and the semiconductor crystal is grown exclusively from an upper part of a convex part of the concavo-convex surface.

10 ~~2. The semiconductor base of claim 1, wherein the semiconductor crystal is InGaAlN.~~

15 3. The semiconductor base of claim 1, wherein the convex parts of the crystal growth plane of the substrate form parallel stripes.

20 4. The semiconductor base of claim 3, wherein the semiconductor crystal is InGaAlN and a longitudinal direction of the stripe is in parallel to a (1-100) plane of the InGaAlN crystal.

25 5. The semiconductor base of claim 1, which comprises the substrate and the semiconductor crystal formed on said substrate by vapor phase growth, wherein the substrate has the concavo-convex surface as the crystal growth plane, the semiconductor crystal is grown exclusively from the upper part of the convex part of the concavo-convex surface, the concavo-convex surface is covered with a semiconductor crystal grown, and a cavity is formed between the semiconductor crystal layer and the concave part of the concavo-convex surface.

30 6. The semiconductor base of claim 1, wherein the concave part of the concavo-convex surface of the substrate is covered with a mask on which the crystal cannot substantially grow, and the semiconductor crystal is crystal grown exclusively from the upper part of the convex part of the concavo-convex surface of

the substrate.

7. A semiconductor base comprising a first semiconductor crystal layer obtained by making a crystal growth plane of a substrate a concavo-convex surface and crystal growing exclusively from an upper part of a convex part of the concavo-convex surface by vapor phase crystal growth, and a second semiconductor crystal layer formed by making a surface of the first semiconductor crystal layer a concavo-convex surface and similarly crystal growing exclusively from an upper part of the convex part of the concavo-convex surface.

8. The semiconductor base of claim 7, wherein the concave part of the concavo-convex surface of the substrate is covered with a mask on which the crystal cannot substantially grow, the first semiconductor crystal layer is formed by crystal growth exclusively from the upper part of the convex part of the concavo-convex surface of the substrate, the convex part of the concavo-convex surface of the first semiconductor crystal layer is covered with a mask, on which the crystal cannot substantially grow, and the second semiconductor crystal layer is formed by crystal growth exclusively from the upper part of the convex part of the concavo-convex surface of the first semiconductor crystal layer.

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9. A semiconductor base comprising a third semiconductor crystal layer formed by making a surface of the second semiconductor crystal layer of the semiconductor base of claim 7 a concavo-convex surface, and similarly vapor phase growing thereon, or plural semiconductor crystal layers formed in multiplicity by repeating similar steps.

10. A semiconductor base comprising a third semiconductor crystal layer formed by making a surface of the second semiconductor crystal layer of the semiconductor base of claim

8 a concavo-convex surface, covering the concave part with a mask on which the crystal cannot substantially grow, and similarly vapor phase growing thereon, or plural semiconductor crystal layers formed in multiplicity by repeating similar
5 steps.

11. A method for manufacturing a semiconductor base, which method comprises, for vapor phase growth of a semiconductor crystal on a substrate, processing the substrate surface in
10 advance to give a concavo-convex surface, supplying an ingredient gas to the substrate, and covering the concavo-convex surface of the substrate with a semiconductor crystal formed by crystal growth exclusively from an upper part of a convex part of the concavo-convex surface.

12. The method of claim 11, wherein the concave part of the concavo-convex surface of the substrate is covered with a mask on which the crystal cannot substantially grow, and an ingredient gas is supplied to the substrate, whereby the
20 concavo-convex surface of the substrate is covered with a semiconductor crystal grown exclusively from the upper part of the convex part of the concavo-convex surface.

13. A method for manufacturing a semiconductor crystal, which
25 method comprises making a crystal growth plane of a substrate a concavo-convex surface, growing a crystal exclusively from an upper part of a convex part of the concavo-convex surface by vapor phase growth to cover the concavo-convex surface with a semiconductor crystal, thereby giving a laminate comprising a
30 cavity between the semiconductor crystal layer and the concave part of the concavo-convex surface, and separating the semiconductor crystal from the substrate at said cavity part.

14. The method of claim 13, wherein the concave part of the
35 concavo-convex surface of the substrate is covered with a mask

on which the crystal cannot substantially grow, and thereafter the crystal is grown by vapor phase growth exclusively from the upper part of the convex part of the concavo-convex surface.

5 15. The method of claim 13, wherein the semiconductor crystal is InGaAlN.

16. The method of claim 13, wherein the convex parts of the crystal growth plane of the substrate form parallel stripes.

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17. The method of claim 16, wherein the semiconductor crystal is InGaAlN and a longitudinal direction of the stripe is perpendicular to a (1-100) plane of the InGaAlN.

15 18. A method for manufacturing a semiconductor crystal, which method comprises making a crystal growth plane a concavo-convex surface, growing a crystal exclusively from an upper part of a convex part of the concavo-convex surface by vapor phase growth to cover the concavo-convex surface to form a first
20 semiconductor crystal layer, making a surface of the first semiconductor crystal layer a concavo-convex surface, growing a crystal exclusively from an upper part of a convex part of the concavo-convex surface of the first semiconductor crystal layer to cover the concavo-convex surface with a second semiconductor
25 crystal layer, thereby giving a laminate comprising a cavity between the second semiconductor crystal layer and the concave part of the concavo-convex surface, and separating the semiconductor crystal from the substrate at said cavity part.

30 19. The method of claim 18, wherein the concave part of the concavo-convex surface of the first semiconductor crystal layer is covered with a mask on which the crystal cannot substantially grow, and thereafter, the second semiconductor crystal layer is crystal grown by vapor phase growth
35 exclusively from the upper part of the convex part of the

concavo-convex surface.

20. A method for manufacturing a semiconductor crystal, which
method comprises making a surface of the second semiconductor
5 crystal layer in the manufacturing method of claim 18 a
concavo-convex surface, forming a third semiconductor crystal
layer by vapor phase growth, or plural semiconductor crystal
layers in multiplicity by repeating similar steps, thereby
giving a laminate comprising a cavity between the semiconductor
10 crystal layer and the concave part of the concavo-convex
surface, and separating the semiconductor crystal from the
laminate at the cavity part.

21. A method for manufacturing a semiconductor crystal, which
15 method comprises making a surface of the second semiconductor
crystal layer in the manufacturing method of claim 19 a
concavo-convex surface, covering the concave part of the
concavo-convex surface with a mask on which the crystal cannot
substantially grow, forming a third semiconductor crystal layer
20 by vapor phase growth, or plural semiconductor crystal layers
in multiplicity by repeating similar steps, thereby giving a
laminate comprising a cavity between the semiconductor crystal
layer and the concave part of the concavo-convex surface, and
separating the semiconductor crystal from the laminate at the
25 cavity part.